

Method for Authorization.

The present invention concerns a method for granting access.

5 Computers and mobile telephones are currently used as equipment for carrying out transactions and for giving a signature of different types. Furthermore, computers are used to an ever greater degree to collect information with different degrees of confidentiality. It is often sufficient
10 to log in with a password or a PIN code in order to subsequently be able to carry out transactions or to handle information during a limited period. This means that a terminal may be open for unauthorised use if it is left unmonitored or if it is stolen within a certain time from the
15 user having logged in.

In order to prevent this, there are requirements for codes or for the use of a magnetic card or what is known as a "smart card" as a means of identification. One disadvantage of such
20 systems is that the user often experiences these as awkward and as a result of this often seeks to exploit shortcuts, which reduces the level of security.

One problem with codes is that these can be read by
25 eavesdropping unless the information has been encrypted, which may create a demand for particular software, hardware or a password that is to be distributed such that it can be used by the user.

30 The present invention solves this problem and offers a method in which the identity of a user can be established with high security.

The present invention thus relates to a method for granting access to devices such as computers, doors, vehicles or other arrangements to which access for a user is desired, comprising the transmission of a code over a short-range radio link, and it is characterised in that an access code (an ID-code) is transmitted from a central computer using radio waves to a radio terminal in the possession of the user, in that the radio terminal is caused to transmit the said ID-code over the said short-range radio link to the said arrangement, in that the said arrangement or a transmitter unit in the said arrangement is caused to transmit the said ID-code to the said central computer, and in that the said computer is caused to compare the received code with the code that the computer transmitted to the radio terminal.

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The invention will be described in more detail below, partially in association with the embodiment of the invention shown in the attached drawing, where

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- Figure 1 shows a block diagram in order to illustrate the invention.

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The present invention thus concerns a method for granting access for arrangements such as computers, doors, vehicles or other arrangements to which it is desired that a user have access. The invention will be described below in association with an example in which access to a computer is desired and an example in which access to a locked door is desired. However, the invention can be exploited for all arrangements to which it is desired to grant access, such as vehicles, 30 telephones, etc.

The method comprises the transmission to the arrangement of an ID-code over a short-range radio link.

According to the invention, an access code (an ID-code) is transmitted from a central computer 1 over radio waves to a radio terminal 3 in the possession of the user. The radio 5 terminal may be, for example and preferably, a mobile telephone. It may, however, for certain applications be constituted by a communication radio of the type, for example, that is used by the rescue services. For the example in which the radio terminal is a mobile telephone, the 10 transmission takes place over a telephone network 8, via a base station 7 to the telephone via radio 9.

Furthermore, the radio terminal 3 is caused to transmit the said ID-code over the said short-range radio link to the said 15 arrangement 2, as is illustrated by means of the arrow 5.

The said arrangement 2; 11, 12 or a transmitter unit in the said arrangement is thereafter caused to transmit the said ID-code to the said central computer 1 over a computer 20 network 6, 10, 15.

The said computer 1 is subsequently caused to compare the code that has been received with the code that the computer transmitted to the radio terminal.

25 A circuit has in this way been created in which a transmitted code can be compared with a received code. In the case that the codes agree with each other, the central computer 1 can, in the next stage, be caused to transmit a second code to the 30 arrangement 2 that makes it possible for the arrangement to be used in the manner intended by the user.

Since the central computer transmits an ID-code to a certain mobile telephone or other radio terminal, it can be assumed that the user of this mobile telephone is the person who transmits the code to the said arrangement over the said 5 short-range radio link. Alternatively, the circuit thus can be used in such a manner that a registration of whether the codes agree is made, which in this way can be assumed to specify that the correct person is using the arrangement, or that the use of the arrangement is unauthorised.

10 According to one preferred embodiment, the central computer 1 is initiated to transmit an ID-code to the radio terminal through either the arrangement or the radio terminal transmitting a request for a code to the central computer 1. 15 With respect to the arrangement, the request can be transmitted over the computer network 10, or, with respect to a mobile telephone, over the mobile telephone network 7, 8, 9.

20 It is naturally possible to initiate the said circuit at any freely chosen point, i.e. in the central computer 1, with the mobile telephone 3, or in the arrangement 2.

According to one preferred design, the said short-range radio 25 link is what is known as an "RFID" link of known type. Such links may work in two directions with two transmitting units and two receiving units, or they may work in one direction only such that one unit transmits an enquiry signal that is received by, modulated by, and reflected by the second part 30 in the form of a transponder. The said ID-code can, for example, be transmitted in this manner by means of the modulation.

According to an alternative preferred embodiment, the said short-range radio link is what is known as a "Bluetooth" link.

5 The said arrangement 2, 11 and the said radio terminal 3 have in both cases a transmitter/receiver unit 3, 4; 12 for the radio link.

According to one preferred design, the said radio terminal is 10 a mobile telephone comprising one part of the said short-range radio link. The radio terminal is preferably a mobile telephone with an integral Bluetooth function.

A Bluetooth module is thus built into the arrangement 2, 11. 15 It is also possible to use another radio technology such as WLAN (Wireless Local Area Network). However, it is important that the range of the radio link can be made sufficiently short, independently of the technology used, in order to activate only the arrangements that are intended.

20 According to one example, the said arrangement is a computer (2) or a computer terminal to which access is required.

In this design, the user can request via the computer 2 a 25 code from the central computer 1 in order to be able to use the computer 2. This request can contain the ID number of the user. The central computer 1 thus transmits a code to the mobile telephone 7 of the user, which subsequently transmits the code over the radio link 5 to the computer 2. The 30 computer 2 transmits the code to the central computer 1. The central computer in this way receives confirmation that the correct code has been received by the computer, whereby the user can use the computer in the manner that is granted by

the said code. This may be a question of full or limited use, such as carrying out financial transactions.

According to a second example, the said arrangement is a door 5 or a gateway to which access is required such that it can be opened. In this case it is preferred that the said arrangement comprises a communicator 12 connected to the central computer 1, which communicator 12 is arranged to communicate with the said radio terminal 3 over a short 10 distance using an RFID link or a bluetooth link.

According to this example, it may be a question of rescue personnel being equipped with a radio terminal 3 in the form of a mobile telephone with an integral RFID link or bluetooth link 13. The communicator 12 is also equipped with such a link. When a fire-fighter, for example, wishes to open the door, he rings to the central computer 1 over the telephone network 7, 8, 9 and transmits information about the door that is concerned. This can take place through a numerical 20 designation or through another unique identity.

Alternatively, the telephone 3 communicates through the said link with the communicator whereby the number of the mobile telephone is transmitted to the communicator 12. In the latter case, the information is transmitted from the 25 communicator 12 to the central computer 1. In both cases, the central computer 1 subsequently transmits a code to the mobile telephone that, once it has received the code, transmits it to the communicator 12 over the said link, whereby the door can be opened.

30 It is clear that, both in the case with a computer 2 and in the case with a door 11, that the code can vary with time, in the case in which the central computer transmits the code to

the radio terminal 3 and to the arrangement 2; 11. Variation in time makes unauthorised use through eavesdropping of the code significantly more difficult.

5. According to one preferred embodiment the arrangement 2; 11 may be arranged to compare the codes received from the computer 1 and from the radio terminal 3.

According to one preferred design, the code transmitted to 10 the central computer comprises a network address belonging to the arrangement 2; 11. This means that the arrangement is identified for the central computer, and this not only facilitates the transmission of a code from the central computer 1 to the arrangement, it also increases the security 15 in the system against unauthorised use.

According to one design, the system can be used to ensure that, for example, the right people enter a meeting room. In this case, a person's transponder in the form of an RFID 20 circuit or a bluetooth circuit in the mobile telephone of the person is read by a communicator at the door of the room. The communicator transmits to the central computer a code that refers to the transponder. The central computer transmits a temporary code to the mobile telephone of the person, which 25 mobile telephone sends the code onwards to the central computer through the communicator. A circuit has in this way been created, in which the central computer has information about the said temporary code, the person's mobile telephone number coupled to that code that was initially read, and the 30 name of the person.

According to another preferred embodiment the said code is used to encrypt information that is transmitted from the

arrangement to the central computer. The code can in this way comprise an encryption key. This further increases the security against the unauthorised use of a code that has been read by eavesdropping.

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According to a further preferred embodiment, the said arrangement 2; 11 comprises a reading arrangement 4; 12 in order to read biometric data from the said user and in order to cause the said arrangement 2; 11 to transmit biometric data to the central computer 1. Such biometric data is transmitted to the central computer 1 for comparison with reference data previously stored in the central computer in order to further increase the security that it is the correct person that is using the radio terminal or the computer 2.

10 The said reading arrangement 4; 12 for reading biometric data from the said user may be a reading arrangement known per se of suitable type, such as for reading fingerprints or the iris of the eye.

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20 A number of designs have been described above. It is, however, clear that the invention can be varied, for example with respect to the location at which the circuit is initiated and started, as can the number of different arrangements that form the said circuit be varied.

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The present invention, therefore, is not to be seen as limited to the embodiments specified above, since the invention can be varied within the scope of the attached claims.